

Recap Clamp Installation

RIKEN/RBRC

Itaru Nakagawa












Clamp Schedule



@RIKEN



@BNL

	3	4	5	6	7	8	9	10	11
40 clamps production		Delivered to BNL							
40 clamps Install				6/15					
Humidity Test @ test bench									
Design Review			5/16	Basically OK, except for a few homework					
Humidity test @ 1008									
Procurement					Bid				
Production									
Partial Delivery									
QA									
Install									

5/16
Review

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We met on Monday, May 16th to Review the plans for Termination of the PHENIX Muon Tracker station-3 anodes with a clamp-on terminator.

This is important to reduce the effect of large pulses that have been seen frequently in 500 GeV p+p running, and has been shown to reduce after pulsing and baseline shifts caused by the lack of termination of these anodes by a large factor (3 or more).

Attending were:

Review Committee - Mike Leitch, Don Lynch, Ed O'Brien, Vinnie Polychronakos, and Atsushi Taketani (by phone)

MuTrig group - Yoshimitsu Imazu, Itaru Nakagawa, Yoshinori Fukao (by phone), Naohito Saito (by phone)

Slides from the review are posted here,

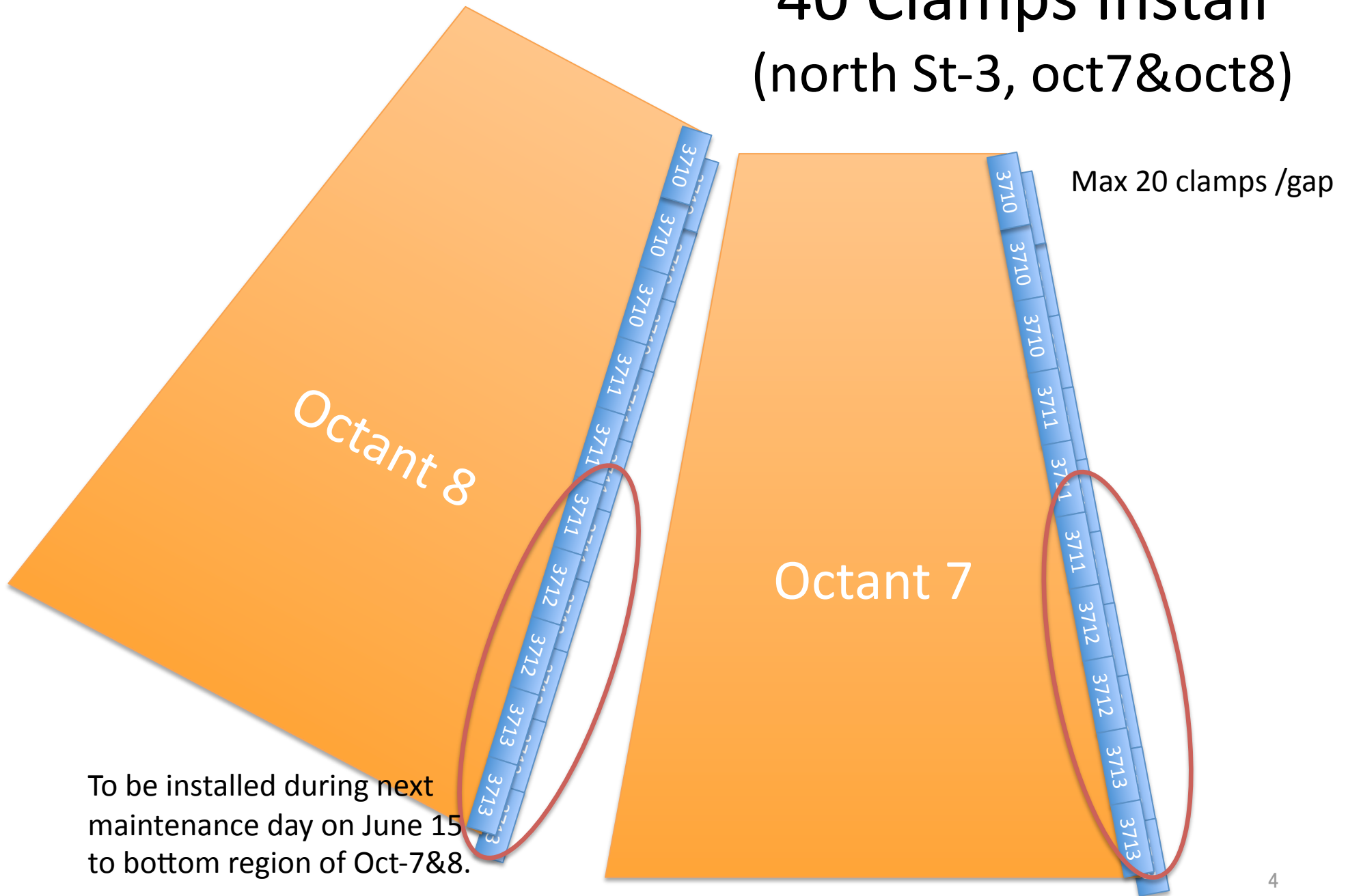
<https://www.phenix.bnl.gov/cdsagenda/fullAgenda.php?id=a11266#2011-05-16>

The MuTrig group presented very impressive studies of the problems and proposed solutions, and the committee agreed with the diagnosis of the problems and the general strategy for mitigating their effect. The committee notes that the muon trigger group has also worked separately to understand the source of the large pulses, thought to be slow neutrons, and has worked to reduce that source also - but this was not discussed here and was not part of this review - only the reduction of the resulting effects via termination were discussed.

The Muon Trigger group is commended for the extensive studies they have done to arrive at and gain confidence in the proposed solution.

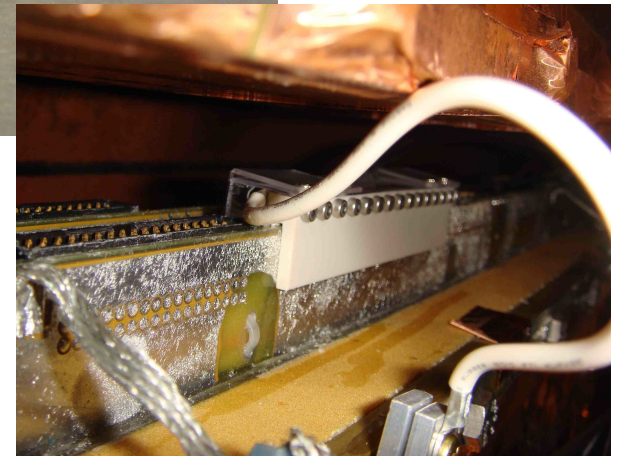
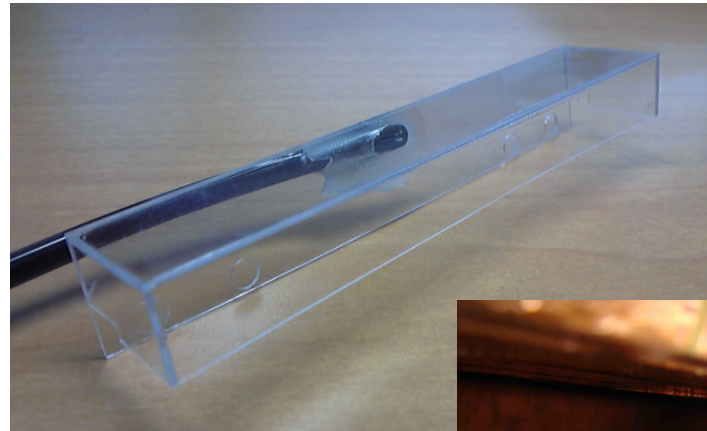
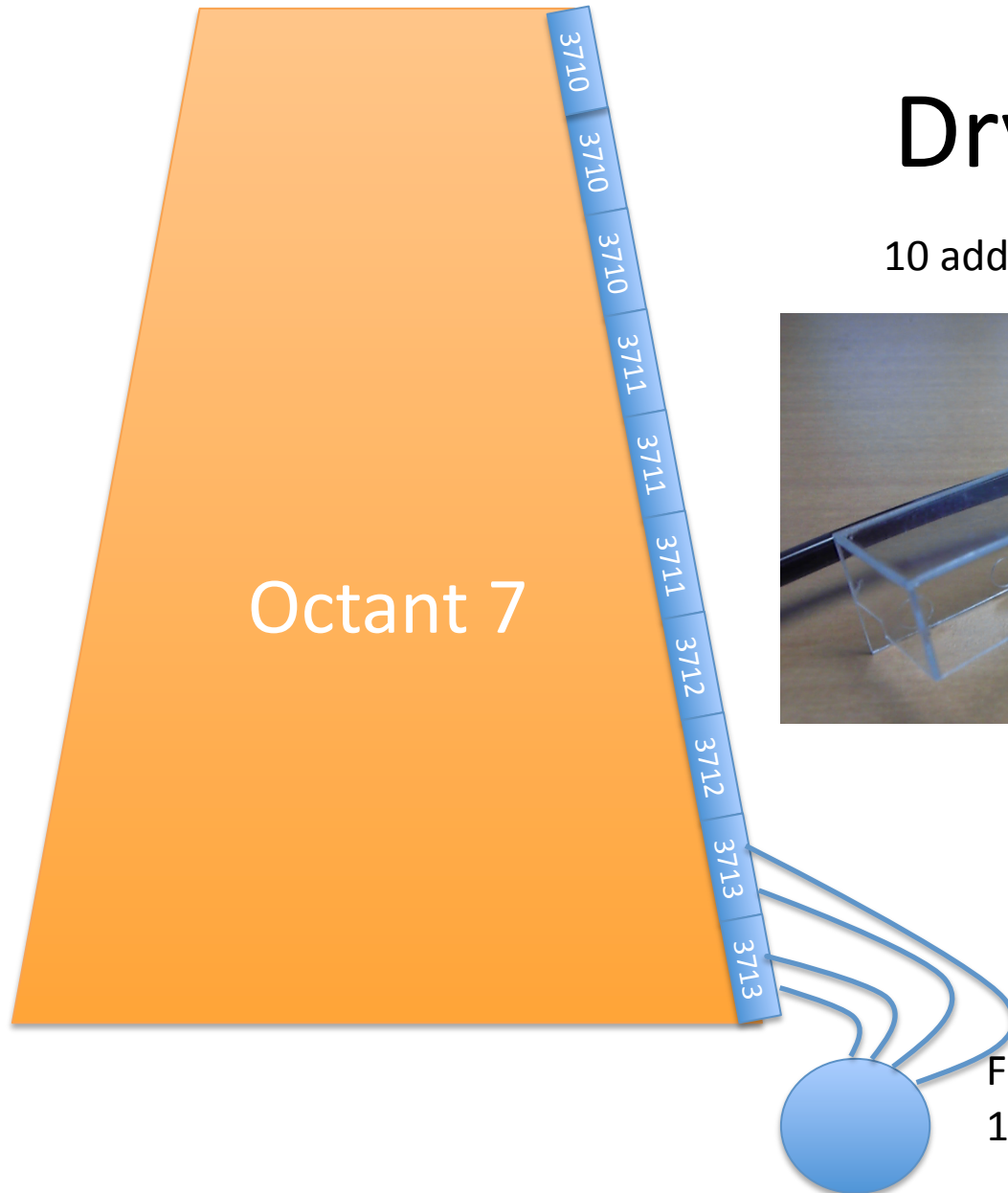
Action Items for the Muon Trigger group:

40 Clamps Install (north St-3, oct7&oct8)



Dry Air Cover

10 additional dry air covers to be installed



Flow rate
100ccm/clamp?

Manifold -> Requested to Carter

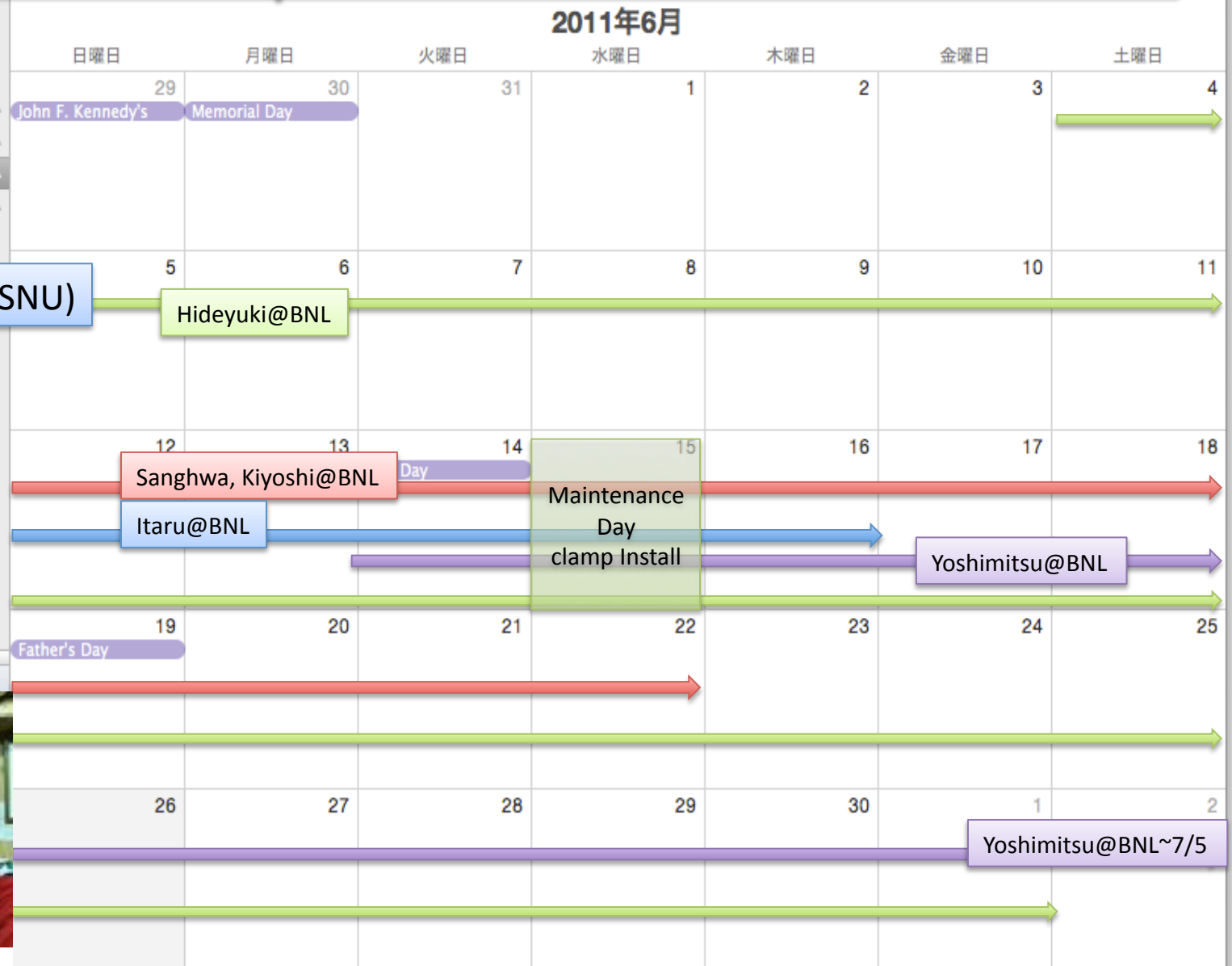
40 Clamps Install Man Power



Sanghwa Park (SNU)



Yoshimitsu Imazu

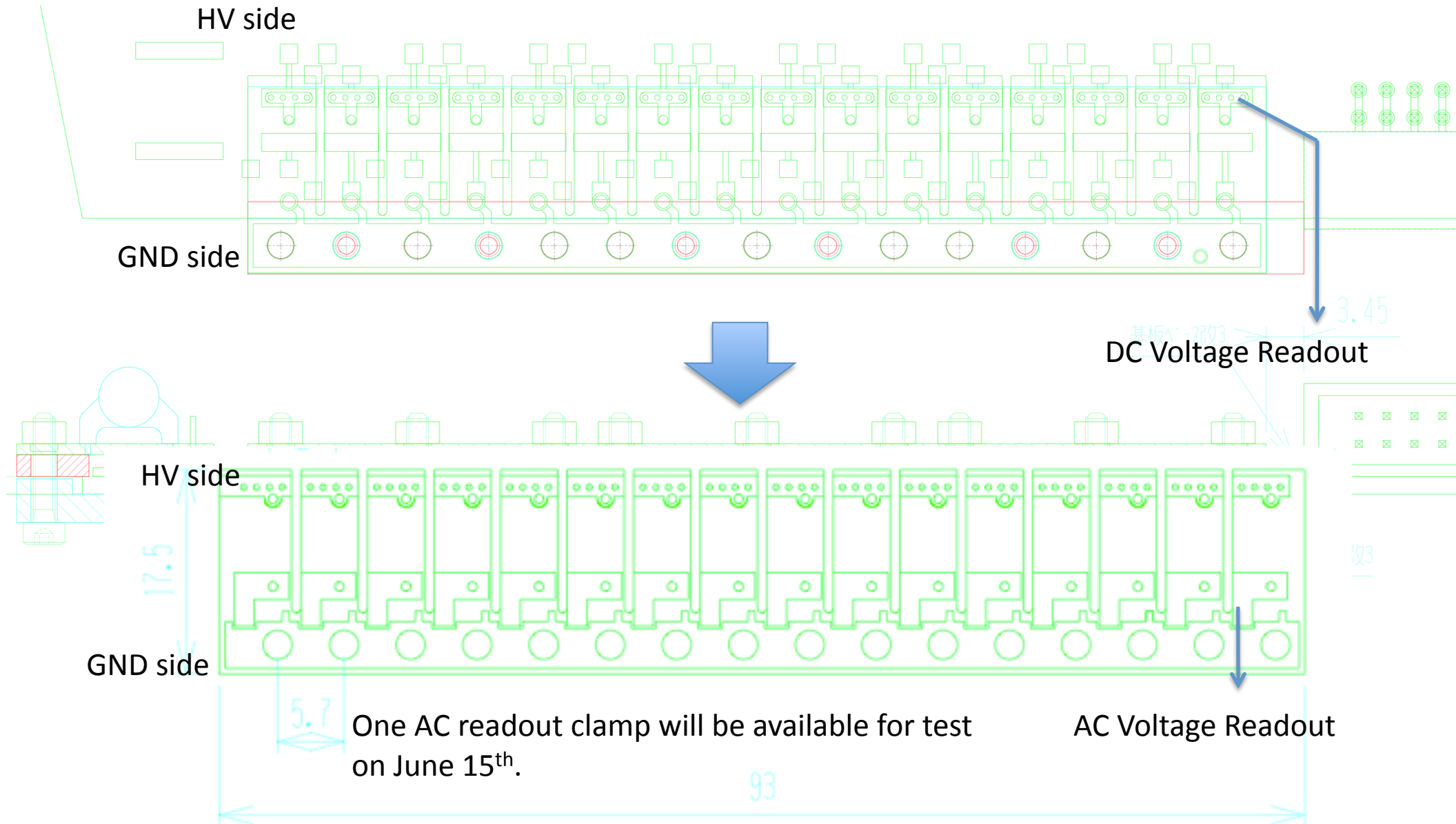


Yoshimitsu will stay in BNL until the end of Run11 just in case.

6/15 Access Day Install

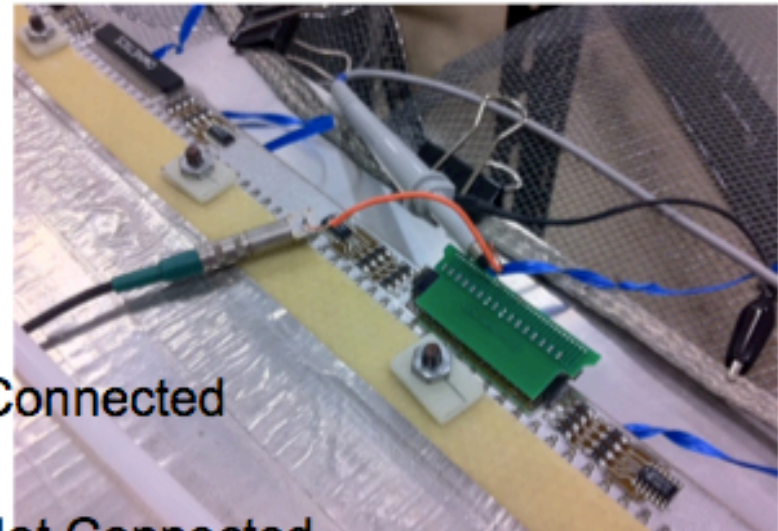
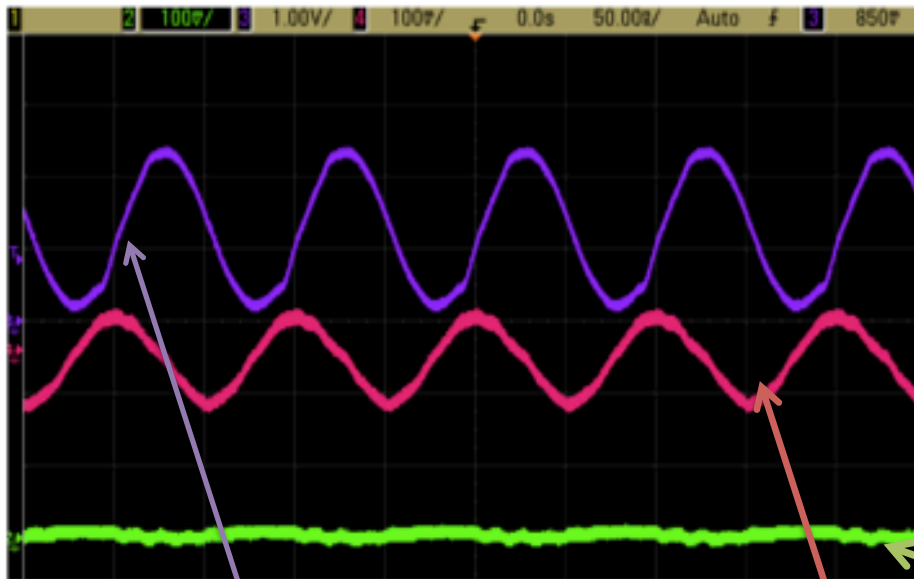
- Itaru, Yoshimitu, Sangwha, and Hideyuki will work on install. (All confined space trained)
- The maintenance day may be less than 1 shift. Need access to North MuTr thru the hatch as soon as possible. -> Survey!
- We'll install as many as possible clamps up to 40 clamps
- Successful contact rate, drawing current w. HV will be closely monitored during/after installation

AC Readout



AC readout attempt @ test bench

● Recap Read-out for Connection



Input AC pulse from Cathode

Connected

Not Connected

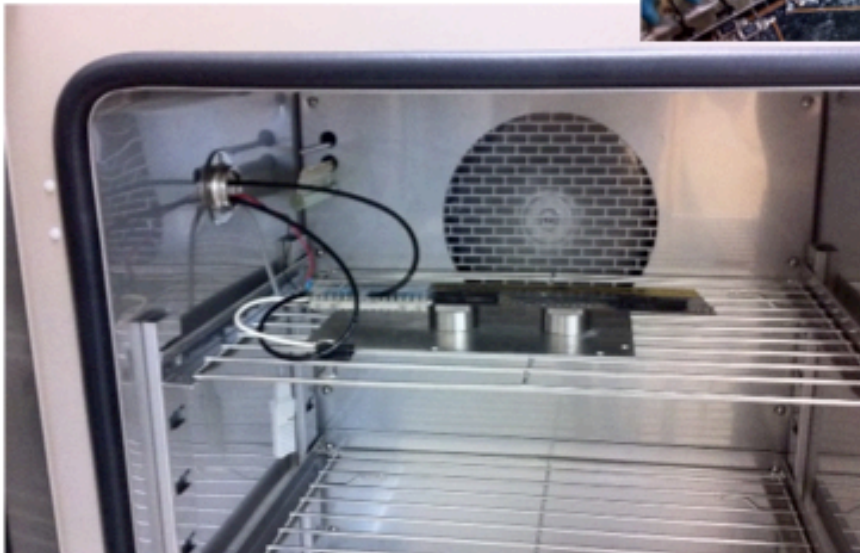
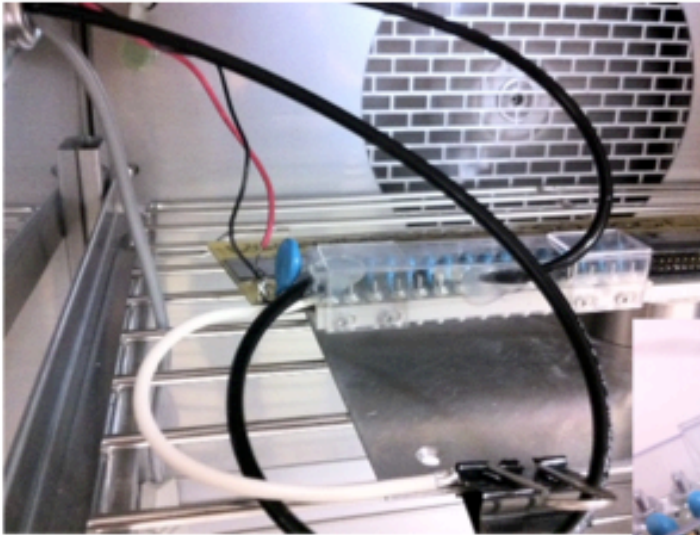
Clamp channel not in contact w/ pad

Clamp channel in contact w/ pad

Clearly seen AC signal difference between channels in/not in contact with pads !

● Dry Air Test

Dry air cover test in humidity chamber
See if it helps to reduce drawing current.



w/ 0.1% humid air (10% @BNL)



$$1/2 \rho v^2 = \Delta p \dots ?$$



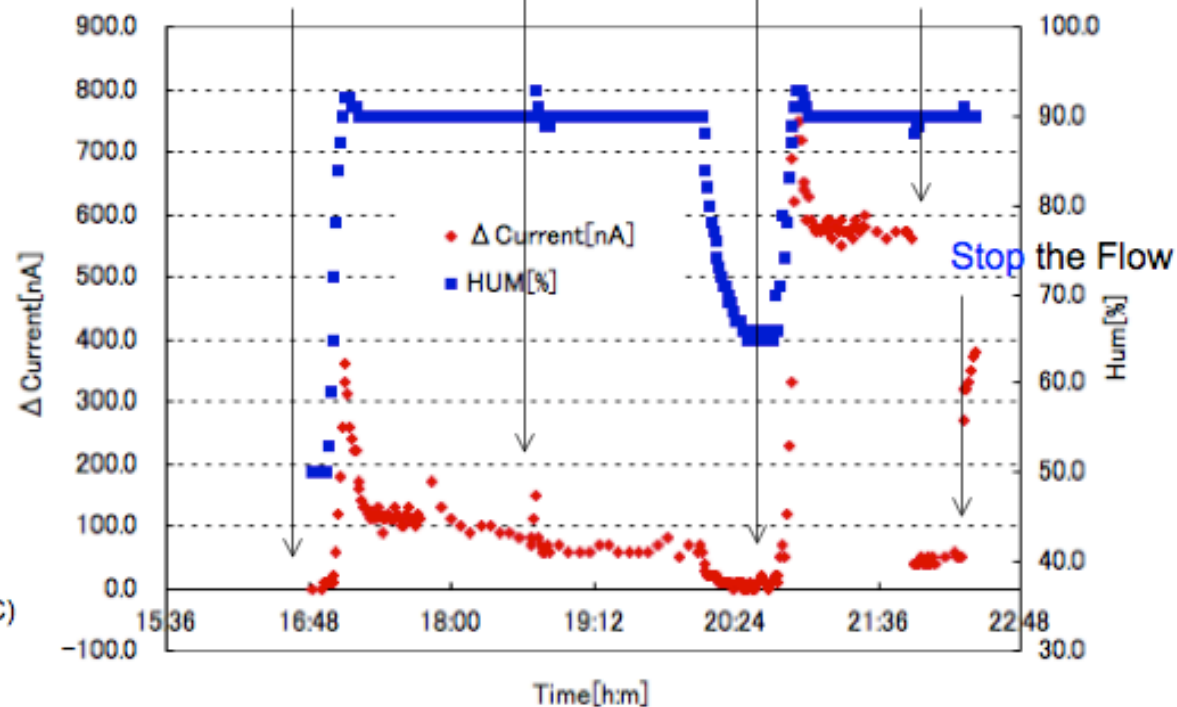
Change to 0.5 kgf/cm²

Start w/ 1.5kgf/cm² flow

Stop Air Flow

Resume w/ ~0.1 kgf/cm²

HV: 2000V
w/ clamp
w/ board coating
(thick(4 times) PC)



• sharp reaction to air flow

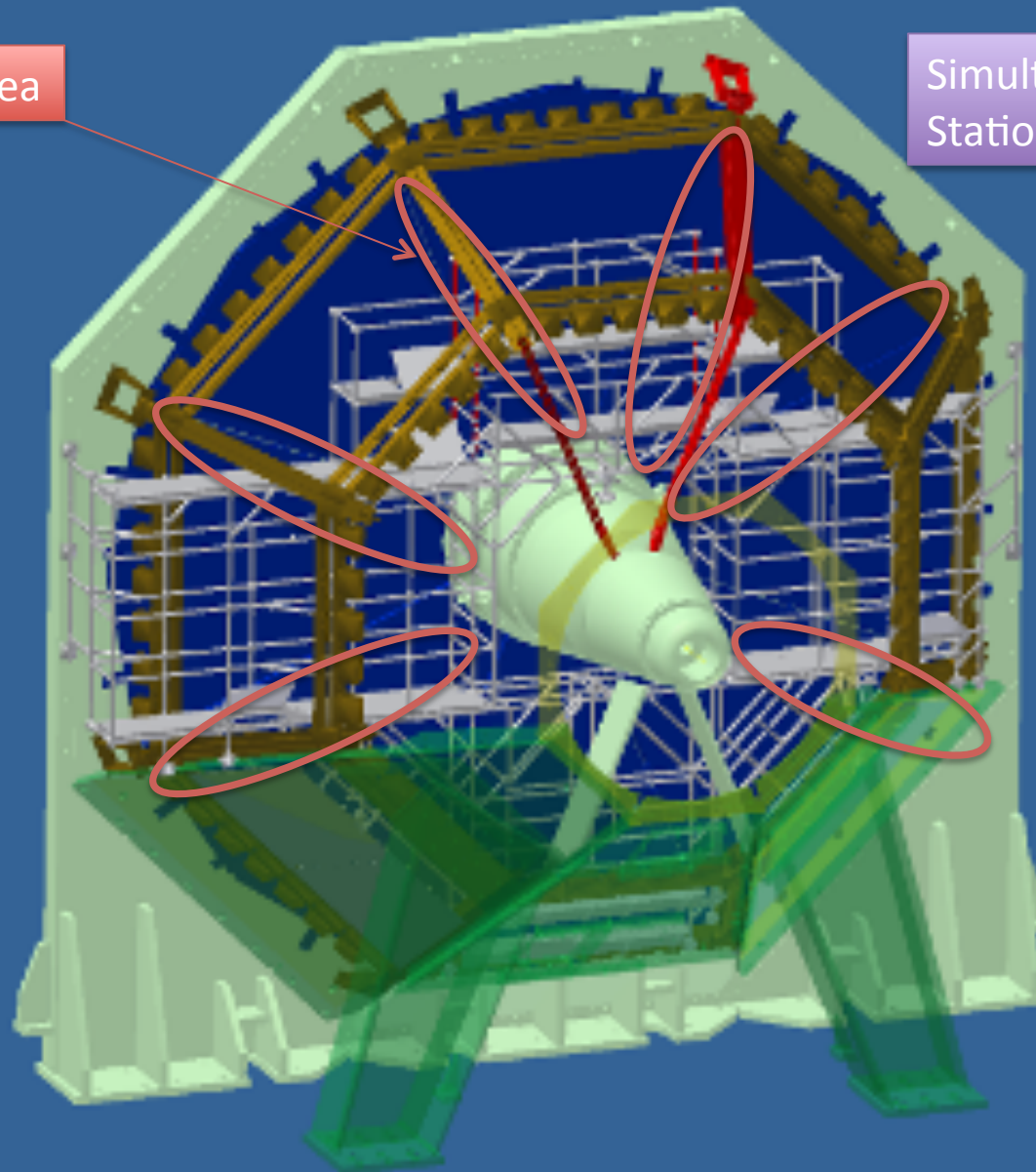
• large amount flow unnecessary: quantitatively... $1/2\rho v^2 = \Delta p..?$

Dry air cover suppress drawing current ~1/6 at 90% humidity

Station-2&3 Scaffold

Access to Anode Area

Simultaneously Install
Station-2 terminators



PHENIX Requirement

- Station2&3 Scaffold
- Dry Air System
 - Compressor capacity
 - Plumbing
 - Manifolds
 - Adapters